

**REMARKS**

Claims 1-30 are pending in this application. By this Amendment, claims 1-3, 7, 8, 11, 12, 16 and 24 are amended. Various claims, such as claim 16, are amended for clarity and these amendments are unrelated to issues of patentability.

Entry of this Amendment is proper under 37 C.F.R. §1.116 because the amendments: a) place the application in condition for allowance for the reasons set forth below; b) do not raise any new issues that require further search and/or consideration; and c) place the application in better form for an appeal, should an appeal be necessary. More specifically, the above amendments merely incorporate subject matter previously recited in dependent claims into the independent claims. See, for example, previous dependent claims 2, 3, 11 and 12. Because the independent features have already been considered, these amendments do not raise any new issues that require further search and/or consideration. Entry is proper under 37 C.F.R. §1.116.

Applicants respectfully submit that the finality of the Office Action is improper and should be withdrawn. In particular, applicants' previous amendment (filed March 17, 2005) did not necessitate the new rejection. The March 17 Amendment merely reworded claims for clarity. For example, claim 1's recitation of "each gain stage increases the voltage stage of the RF signal" corresponds with the previously claimed "each gain stage increases the voltage of the RF signal." See also claim 1's recitation relating to "to cancel an undesired offset," as well as claim 8's recitation. Accordingly, the present rejection, if proper, should have been originally presented in the previous non-final Office Action as applicants' March 17 amendments did not necessitate a new grounds of rejection. Rather, it appears that a new search was performed for the present

Office Action since the previous arguments overcame the previous rejection. This is not a proper basis for the finality of the present Office Action. Withdrawal of the finality of the outstanding Office Action is respectfully requested.

The Office Action rejects claims 1-30 under 35 U.S.C. §103(a) over U.S. Patent 6,516,187 to Williams et al. (hereafter Williams) in view of U.S. Patent 5,371,479 to Hagerty. This rejection is respectfully traversed.

The Office Action asserts that Williams teaches a plurality of gain stages as shown by elements 210, 212, 214 and 216 in Fig. 2. The Office Action also asserts that Williams teaches a feedback loop that cancels an undesired offset of the resulting amplified signal wherein the feedback loop connects to the output port and the input port. However, the Office Action cites Williams' Abstract which relates to a DC offset amplifier 170 coupled to a low pass filter 160 and a subtractor 140 to generate the amplified DC offset signal. See Fig. 1. The amplifier 170 shown in Fig. 1 does not correspond to the elements 210, 212, 214 and 216 shown in Fig. 2. The Office Action also appears to reference an amplifier 218 (Fig. 2), which is a feedback amplifier to provide an offset adjustment to the amplifier 210. The output of amplifier 218 is only provided to the amplifier 210 and is not input to each of amplifiers 212, 214 and 216. See col. 3, lines 26-40. Applicants respectfully reference Fig. 2A of the present application that shows a plurality of variable gain amplifiers 110 and a DC offset canceling loop 120 connected to an input port of the first VGA 110 and an output port of the last VGA 110. See pages 4-5 of the present specification relating to Fig. 2A of the present application.

The Office Action states that Williams does not teach “a plurality of feedback loops ... such that each gain stage is connected to a corresponding feedback loop that cancels the undesired offset of its corresponding gain stage.” See page 3, lines 1-4 of the Office Action. The Office Action’s citation to Figs. 4-6 appears to be a typographical error. The Office Action then asserts that Hagerty discloses a plurality of feedback loops wherein each feedback loop connects the output port and the input port of a corresponding one of the gain stages, such that each gain stage is connected to a corresponding feedback loop that cancels the undesired offset of its corresponding gain stage. The Office Action references a first local feedback loop 140, a second local feedback loop 240, a capacitor 319 and a capacitor 373. While Hagerty discloses a feedback loop 140 with respect to amplifier 110 and a feedback loop 240 with respect to amplifier 210, the Office Action does not acknowledge that Hagerty specifically discloses the use of a two stage feedback loop 380 for amplifiers 310 and 360 as well as the interstage feedback loop 390 for each of the four amplifiers 110, 210, 310 and 360. Thus, Hagerty does not teach a plurality of feedback loops where each feedback loop is coupled to the output port and the input port of a corresponding one of the gain stages. Hagerty clearly discloses a two stage feedback loop 380 and an interstage feedback loop 390. These are express teachings of Hagerty that cannot be ignored since the reference must be viewed as a whole. Hagerty’s express purpose is based on the interstage feedback loop 390. As such, this feature cannot be ignored when combining features of different references.

Additionally, Hagerty does not teach or suggest a plurality of feedback loops which are coupled such that each gain stage is connected to a corresponding feedback loop to cancel a

direct current offset voltage of its corresponding stage. The Office Action references Hagerty's col. 5, lines 10-15 and 39-45. However, these features clearly relate to an interstage feedback loop 390. That is, col. 5, lines 10-15 and lines 39-45 relate to the four stages (i.e., around the amplifiers 110, 210, 310 and 360). Thus, Hagerty does not teach or suggest the features related to the direct current offset voltage of its corresponding gain stages, but rather relates to an interstage feedback loop 390 around all of the amplifiers 110, 210, 310 and 360.

Independent claim 1 further recites each feedback loop including a high-pass filter that filters the direct current offset voltage accumulated by its corresponding gain stage. Hagerty also does not teach or suggest these features. That is, the feedback loop 240 around the amplifier 210 merely includes a resistor 242 and the two stage feedback loop 380 around the amplifiers 310 and 360 merely includes a resistor 382. The resistors 242 and 382 do not correspond to high pass filters. Additionally, the resistors 242 and 382 cannot be considered as high-pass filters that filter direct current offset voltages accumulated by corresponding gain stages.

Furthermore, applicants respectfully submit that the references may not be combined as alleged. That is, Williams relates to the feedback of the amplifier 218 to provide offset adjustment to the amplifier 210. Williams also includes a VGA control signal to provide gain control to the amplifiers 210 and 212. These are the express teachings of Williams. See col. 3, lines 26-30. There is no suggestion of how Williams may be modified based on Hagerty's teachings of the interstage feedback loop 390, the two stage feedback loop 380 as well as resistors 242 and 382 of feedback loops. The Office Action asserts that the motivation to provide this combination is "to obtain high gain and accurate transient response around the

stage loops” as taught by Hagerty’s col. 5, lines 38-43. However, this alleged motivation provided by Hagerty specifically relates to the interstage feedback loop 390, which therefore teaches away from the claimed features. Therefore, there is no suggestion or motivation to provide a feedback loop around each of the Williams’ amplifiers as alleged. Accordingly, the references may not be combined as alleged in the Office Action.

For at least the reasons set forth above, the applied references, even if combined, do not teach or suggest all of the features of independent claim 1. Independent claim 1 therefore defines patentable subject matter.

Each of independent claims 7 and 8 define patentable subject matter for at least similar reasons. That is, independent claim 7 recites canceling an undesired offset of each gain stage using a plurality of feedback loops, wherein each feedback loop is connected to the output port and the input port of a corresponding one of the gain stages, such that each gain stage is connected to a corresponding feedback loop that cancels the undesired offset of its corresponding gain stage, each feedback loop including a direct current offset canceling unit having a high-pass filter to cancel the undesired offset by its corresponding gain stage. For at least the reasons set forth above, the applied references may not be combined as alleged, and even if combined, do not teach or suggest all the features of independent claim 7. Thus, independent claim 7 defines patentable subject matter.

Further, independent claim 8 recites a plurality of feedback loops where each feedback loop is coupled to the output port and the input port of a corresponding one of the gain stages and such that each gain stage is connected to a corresponding feedback loop to cancel an

undesired offset of its corresponding gain stage, each feedback loop including a direct current offset canceling unit having a high-pass filter to filter a direct current offset voltage. For at least the reasons set forth above, the applied references may not be combined as alleged, and even if combined, do not teach or suggest all the features of independent claim 8. Thus, independent claim 8 defines patentable subject matter.

Each of independent claims 1, 7 and 8 define patentable subject matter. Each of the dependent claims depends from one of the independent claims and therefore defines patentable subject matter for at least this reason. In addition, the dependent claims also recite features that further and independently distinguish over the applied references.

For example, dependent claim 5 recites the plurality of gain stages and feedback loops are mounted on a chip, and each feedback loop includes a capacitor mounted on the chip. The Office Action appears to cite Williams' roof filter capacitor 320 (Fig. 3) for this feature. See also Williams' col. 3, lines 3-5. However, the roof filter capacitor 320 is not within a feedback loop as claimed. Thus, Williams' capacitor 320 does not relate to each feedback loop including a capacitor mounted on a chip. Furthermore, the Office Action previously equated the plurality of feedback loops as corresponding to Hagerty. Therefore, the Office Action must show that Hagerty discloses the claimed capacitor as well as discloses the features relating to the chip. However, Hagerty does not disclose each feedback loop includes a capacitor mounted on the chip. As previously indicated, the feedback loop 240 includes a resistor 242 and the feedback 380 includes the resistor 382. See page 4, lines 10-16 of the present application relating to problems involving a capacitor within a feedback loop located outside a chip. It is respectfully

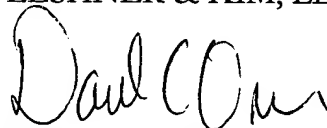
submitted that the applied references do not teach or suggest all the features of dependent claim 5 (similarly dependent claim 14). Thus, these dependent claims define patentable subject matter at least for this additional reason.

### **CONCLUSION**

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and prompt allowance of claims 1-30 are earnestly solicited. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney, **David C. Oren**, at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. §1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,  
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